

An HISTORICAL
DISSERTATION

Concerning the
Malignant Epidemical
F E V E R
of 1756.

With some Account of the MALIGNANT
DISEASES prevailing since the Year 1752,
in *Kidderminster*.

By JAMES JOHNSTONE, M.D.

Tot — *scdum annum etiam Diu tempestatibus & morbis insigni*
vere. C. Tacit. A. L. XVI.

Δοχέει δε μοι αξία γραφης ειναι ταυτα μάλιστα, ὅχόσα τε ἀκαταμά-
θητά εστι τοισιν ιητροῖσιν, ἐπίκαιρα εοντα εἶδεναι, και ὅκοσα μεγα-
λης ἀφελείας φέρει, ἡ μεγαλης βλαβας.

Hippocrat. de Diæta Acutor.

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THE
DIPLOMA

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IN CANDIDACY FOR THE
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DOCTOR OF PHILOSOPHY

BY
JAMES H. HARRIS

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the Faculty of Arts
of the University of Toronto

APPROVED BY THE
FACULTY OF THE UNIVERSITY OF TORONTO

IN TESTIMONY WHEREOF
THE VICE-CHANCELLOR
HAS HEREUNTO SET HIS HAND AND SEAL
THIS 10th DAY OF APRIL 1908

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1908

T O.

Doctor Robert Whytt,

Professor of Medicine in the University of
Edinburgh,

A N D

Doctor Thomas Short,

Late Physician at *Sheffield,*

This Practical Essay is humbly Inscribed ;

As a Monument of unfeigned Esteem, Respect,
and Friendship ;

By,

Gentlemen,

Your most obliged,

and most humble Servant,

James Johnstone.

P R E F A C E.

AS accurate descriptions of diseases have been long *, and now are universally judged, among the best methods of promoting the healing art; I have ventured to make this historical essay public, upon a presumption that the observations it contains, may be usefully applied in treating fevers of the malignant class, which, of late years, have been uncommonly prevalent in many parts of England.

It has been my custom, since I have been engaged in the practice of medicine, to write down short memorandums of the cases of most of my patients, labouring under fevers, and other diseases; that I might have it in my power to consider those which were most remarkable at my leisure: From a great number of such cases, the descriptions and observations in the following tract are deduced and compiled.

In treating of the cure of malignant fevers, I lay down no sanative precept, which I have not, in my sphere of practice, experienced abundantly useful, and generally successful. The cautions which I enter against known practices or remedies, are also drawn from a repeated observation of their mischievous effects.

* Ἱστορίην σοφίης γὰρ δοκῶ ἡγρεῖν καὶ ἀδελφῶν καὶ συγροῖον. Democrit. de Nat. Hom. Vid. Epist. Hippocrat.

Some theoretical reasoning and inferences, however unsuitable to an historical piece, I have added, with a view of rendering the nature of malignant disorders more generally understood, than perhaps they are by many, who will be under a necessity of treating them: And also further to recommend those rules, of the utility of which I was primarily convinced by observation, to those who demand evidence of a different nature. Many practitioners love to know, that a peculiarity in practice is rational, as well as, in fact, successful, before they make it their own.— Both in conversation, and in reading, I have frequently met with physicians, who treated the words putrid and malignant as unmeaning and unscientific terms; to obviate this, and another very dangerous prepossession, frequently brought from the schools by younger practitioners, that all, or most fevers, are merely inflammatory, the last part of my Dissertation dropt from my pen.

In a word, I have thrown together, in a narrow compass, and with all possible plainness, several important experimental truths, which I hope may be of service in preparing many successfully to combat these terrible disorders, in situations and circumstances similar to those I have described. The great frequency of malignant disorders, occasioned, among other dreadful evils, by the continued dearth of corn, renders information of this kind, at present, but too seasonable.

Before I have done, I beg leave briefly to mention the following circumstances, which the distance of my MS. at this time, prevents me from inserting as a supplement to the history.

The

The intenseness and long continuance of the frost, with which the present year set in, almost entirely put a stop to the continuance of the malignant fever with us.—But, in other neighbouring villages and market towns, it has, since the spring hitherto, been very frequent, in places that were little affected with it last year.—The families of the poorer sort of people universally are most subject to it.—And it is observable, that the fever, in some places, first broke out in the parish work-houses, and from thence spread among the neighbouring people with great malignity.—Wherever it has appeared, it has given very apparent and fatal evidence of its infectious nature.—In the beginning, most persons shiver, and are giddy, sick, and faint; the head-ach is not so severe, nor so much complained of as in the fever last year; and a delirium is by no means so general a symptom, and, when it happens, seldom or never fierce, and but of short continuance.—Most people are seized with a looseness, which, if profuse, is not without danger.—The palate and glands are of a crimson shining colour; the tonsils are very early beset with apthous specks; the tongue is parched, soon becoming black and dry; livid and brown petechiæ, and broad vibices of the same colour, very frequently appear upon the breast and back; the sweat and stools smell intolerably fœtid; the patient's weakness is excessive; and the fever runs on to the length of three weeks, before there is any sensible amendment.—In this fever I have ever observed the worst of consequences follow the use of bleeding.—Those few persons who recovered after the loss of blood, escaped always with imminent and apparent hazard of life. As the sick were very little delirious, and were excessively inclined to faint,

faint, it was necessary to prevent the looseness from running to any great height by the use of pulv. cort. chacarrill. and extract or decoct. lign. campechens. and red Port wine mulled with spices. There was moreover room for an earlier use of the bark, and that in larger doses in substance, than formerly. Also, a freer use of wine became more necessary to support the patient's strength and vital force.—In most other respects, the same treatment which last year was necessary, was equally proper, and generally successful, in treating the malignant fevers of the present year.

Kidderminster, Dec. 1,
1757.

AN HISTORICAL DISSERTATION, &c.

THE borough of Kidderminster; situated in 52 Deg. 26 Min. N. Lat. is an inland market-town of the county of Worcester, about one hundred miles W. from London; and at least sixty miles distant from any sea. The inhabitants of this place are generally employed in the worsted and silk manufactory, and are supposed to amount to four thousand and upwards. They are many of them lodged in small nasty houses, for the most part crowded with looms and other utensils. A considerable part of the town is built across some low marshy and boggy ground, which extends itself from N. to S. for several miles above and below the town. These low grounds are frequently overflowed by the swellings of the river Stour, which runs slowly, in the same direction, and empties itself three miles S. of us into the Severn. The stagnating water left by these inundations, rising into the air, in putrid moist vapours, and blown full upon the inhabitants of the town by S. W. and N. Winds, cannot but co-operate with a long course of moist and rainy weather, in producing putrid malignant disorders. In fact this place has been very remarkably liable to such disorders,

A

forders, long before I became acquainted with it, as well as since.

The summer of the year 1752, and the greatest part of the autumn, was most remarkably cloudy, hazy, and rainy; and yet more inclined to warmth than unseasonably cold.—The winter and remaining part of the year, was, if any thing, still more wet and rainy; as likewise was the beginning of the spring 1753. The frosts were few and of a very short duration; and, in general, the winter was warmer as well as more moist than is usual. In the summer, a great number of insects of the beetle kind, devoured the tender buds of trees. This moist and warm state of the air, quickly produced a *low miliary fever*; which began to appear soon after the summer solstice in 1752, and continued very frequent in this place, and in others of our neighbourhood, during the remainder of this year.

This fever chiefly attacked persons of both sexes, of a bloated habit of body, and who were habitually oppressed with low spirits, and inactive in their manner of life; lying-in women were also very subject to it.

In the beginning of the fever, after shivering, they became very hot and restless; and complained of great sickness and lowness of spirits. — Red or white chrystalline miliary eruptions appeared on most parts of the body; and at all times of the disease, but most happily at the *acme*; about the height of the disorder, most persons became comatous, deaf, stupid, or mildly delirious.—Few began to recover before the 20th day, and many not till much later; a diarrhoea carried

ried off some, and, if profuse, sunk the strength of all; great costiveness encreased the delirium. — A gentle laxity, amounting to one or two stools in the day, was always serviceable. — A breathing gentle sweat of a peculiar smell was necessary for recovery; a profuse one was rarely serviceable; sometimes a fatal symptom. The urine was extremely uncertain in its appearances. — The crassamentum of the blood, tho' sometimes covered with a thin buff, was generally loose in its coherence and texture. It was highly necessary to keep up the patient's strength and a moderate perspiration during the course of this fever, by gentle warming diaphoretic and antiseptic medicines; such as Conf. Cardiac: Pulvis Contrayerv. comp. Rad. Serpentar: Camphire, Sal Succini, and Spir. Minderer. When the patient's strength was greatly sunk, small doses of the *bark*, in decoction, extract, or a fine powder, made a very advantageous addition to these medicines; and contributed greatly to the patient's recovery, by supporting the vis vitæ, and the salutary cutaneous excretions; yet it did not in any respect shorten the usual course of these fevers, as in others it sometimes does. Blisters also were found highly serviceable, both by the copious drain, and the stimulus they occasioned. To these medicines, diluting and supporting drinks were joined; and under such treatment, patients who had not been weakened by much bleeding, or any extraordinary purgation, generally recovered.

About Christmas this miliary fever disappeared; but early in the new year 1753, was succeeded by another fever, in which the crasis of the blood was

still more resolved than in the former fever: this alteration seemed to be owing to the continuation of the extreme moisture of the atmosphere throughout the winter. The malignant sore throat, which frequently occurred in the winter 1751-2, and sometimes in the last summer, was now more frequent and more general than ever.

An unaccountable and insensibly increasing languor, lowness, fluttering, weakness, faintness and often vague rheumatic-like pains of the limbs, little attended to at first, were the beginning symptoms of this fever; and were attended with a low, soft, quick pulse, which became more low and unequal in the progress of the complaint. — Its progress was of a sudden very great if the disorder was unhappily treated, either as inflammatory by cooling salts and bleeding, or as rheumatic, by mercurials, guaiacum, and alkaline salts. Many complained of a pain, which they said was like to a rawness or excoriation at the stomach; with giddiness, slight sickness, and an incessant craving or sense of want and void about the *præcordia*. — Some had a propensity to loose stools and profuse hurtful sweating: some bled at the nose; others coughed and spit blood: some complained of a slight pain in the throat; and in these the arch of the palate, uvula and glands, were of a dark livid colour: others, without any sense of pain, had the same appearance, which seemed for the most part only owing to the natural colour of the blood shining through the vessels; for the gums, lips, caruncula lacrymalis, were of the same colour. The tongue was rarely furred, but generally of a red crimson colour; the

the sick complained very little of thirst. The sweat and breath of the sick had a strong, offensive, putrid smell. The sick were languid to excess; and by the least motion, or much sitting up, were ready to sink into fainting fits. In some of the worst cases, livid petechiæ, large livid vibices, and dark brown coloured spots, appeared scattered over the trunk of the body and the limbs. Respiration, and the faculties of the brain, were little affected or altered, unless the patient was near the point of death. Far from any excretion being critical in this disorder, it was found that much sweating itself sunk the patient's strength too much. This fever had no other natural period of increase, excepting what was owing to insufficient or improper treatment: and a critical change in the patient's favour did not happen till they were put under a proper method of cure, which very soon gave apparent relief, the beginning of their recovery. The medicines which produced this happy effect, were such as, with regard to the solids, act as astringents, and incrassate the fluids: viz. the mineral acids, Elix. Vitriol. Spir. Vitriol. Spir. Nitri, and the bark, which was given in substance, in frequent and large doses; finding its preparations by no means so useful and happy in their effects. To these a liberal use of red Port was added, which was extremely useful, alone as a cordial, and when diluted as a drink.—The tendency of the blood to dissolution, in this illness, was so great, that every thing in the least attenuating, was not only not to be depended upon, but was in many unexpected instances hurtful. Thus I perceived that Spirit. Mindereri, and other neutral salts,

salts, and saline lixiviums, which are now very indiscriminately used by too many practitioners, greatly promoted the symptoms; and mere diaphoretic heating medicines, unless liberally joined with the bark, were very little more to be trusted. Indeed the human fluids seemed universally in a more perfect state of resolution at this time, than I have ever known them. Yet circumstances frequently required the application of blisters, which by their stimulus and discharge, produced very happy effects: I used constantly to inspect the serum of the vesicated parts, and found it generally of a deep muddy green; and in proportion as the patient's amendment went on, and the fluids were altered by the use of proper medicines, the serum became gradually more of a yellow, or fine straw colour. This method of viewing the serum, by blisters drained from the cutaneous vessels, seemed to me no less useful in these disorders, in which I never ventured to let blood, than the inspection of blood emitted from the veins, is in those cases which admit of that evacuation *.

This malignant fever was very often (tho' not constantly) complicated with, and in general bore great analogy to the malignant sore throat which at this time prevailed very much in many parts of England.

* In one family, which was most severely and totally affected by this fever, and where it continued long after the general disposition in the atmosphere no longer favoured its production, the severity and continuance of the disorder were attributed to a dead putrified dog, which had been smothered under a heap of wool, and, during the space of a twelve-month, diffused over the dwelling house of this afflicted family, the most putrid stench I ever felt; the cause of which remained so long undiscovered and unknown.

This extraordinary and new disorder, is called by Dr. Fothergill *, The fore throat with ulcers. By Dr. Huxham †, in his last published discourse, The malignant ulcerous fore throat: Dr. Le Cat, of Rouen ‡, very justly calls it, A gangrenous fore throat; seeing those white sloughs, with the colour and appearance of pus, were in reality gangrenous eschars, which when cast off, left behind them pitted scars; the lasting vestiges of loss of substance. This disease has of late years appeared in several parts of America, and in the north of France, and in Britain, almost at the same time; but chiefly in low moist situations, and after a long course of cold damp weather. Children, especially those of a lax habit of body, were most generally affected by it; yet not solely, for adults, such especially as had a thin acrimonious blood, were observed to be very subject to it, at any time when the disorder prevailed; and often at other times to relapses: Indeed lax vessels, and a scorbutic acrimony and thinness of fluids, constituted that habit of body, which seemed most easily and frequently to produce this disorder. I have known it more than once produced by the internal and external use of mercury: Strong purgatives, and the frequent

* Dr. Fothergill's seasonable treatise appeared, I think, about the end of the year 1748. And gave so much information of the nature of this disease, and the method of treating it with success, as proved the means of rescuing the lives of numbers from that certain death, which a disease, of itself dangerous, and made more so by wrong methods of cure, quickly caused.

† A Dissertation on the malignant ulcerous fore throat, by Dr. Joseph Huxham, 1757.

‡ Phil. Transf. Vol. 49. Part 1. Pag. 49. for 1755.

use of aloetics, have certainly had the same effect; and in treating this disorder, such things cannot be too much avoided *.

The appearances of this disorder were far from being the same, but varied greatly in different patients and constitutions, not only in appearance, but also in the degrees of danger.

In many, nothing more appeared, besides a high scarlet or livid colour of the tonnillæ, uvula, and velum pendulum palati: This happened sometimes with, and sometimes without much swelling of the glands about the throat and neck, and without any considerable pain or difficulty in deglutition; the pain, as the disorder gains ground, always abates. The feverish heat is very great, and the patient is extremely low, and vastly restless, during its nocturnal exacerbations. In this situation, the patient's danger is very great, especially under improper or insufficient management: For the livid appearance of the fauces becomes deeper coloured, and inclining to black, the patient's body breaths an offensive cadaverous smell.—At last, when death is at hand, respiration becomes unexpectedly difficult, quick, and peripneu-

* If the phænomena in a salivation are compared with the appearances in the ulcerated sore throat, the clearest analogy and similitude will appear. For in the artificial, as well as the natural disorder, we observe, a low putrid fever attended with a soft undulating pulse, a stinking breath, copious spitting, white aphthous ulcers in the glands, tongue, gums, cheeks; the glands of the head and neck are swelled; sometimes hæmorrhages and bloody stools appear, &c. This sameness of phænomena at once shews us the true state of the fluids, viz. their dissolution in the angina maligna, and directs us to the use of the bark and mineral acids, as remedies to incrassate the fluids; and to avoid mercury, alkaline salts, and attenuants in general, *cane pejus et angue.*

monic ;

monic ; the face has something of a livid hue, the neck is swelled and livid ; and the pulse is fluttering, small, unequal, and intermitting.

In others, the tonsillæ, being constantly more or less swelled, are of a livid, inflamed, shining colour, and give the patient the sensation of a pricking or pungent pain, which is of short duration, for the most inflamed parts of the tonsillæ change into white broad specks, or sloughs, of the appearance of fat, with which the back part of the palate, as well as the glands, is often covered ; the specks also are often observed about the tongue, cheeks, or gums, and sometimes extend deep into the œsophagus or trachea arteria. With these appearances, the difficulty and pain of swallowing, are often much less than one would suppose, from the tumefaction and colour of the parts about the fauces. This anginous fever was not always, though often, attended with cutaneous eruptions ; and these, for the most part red, were sometimes also of the crystalline miliary kind, broke out first, and the disorder in the mouth and throat seemed frequently only a consequence of their sudden retrocession. Under such circumstances as these, timely and proper care prevented all danger ; but if the fever was allowed to run on a week or more, or is in the mean time unhappily treated only with attenuants and coolers, or evacuations, the disorder rapidly gains ground, the febrile nocturnal exacerbations become more and more severe, the sloughs sink deeper, and spread wider, and darken in their colour : the crisis of the blood more and more broken, occasions diarrhæas and hæmorrhages ; and, at last, the pa-

tient is seized with a straitness and shortness in breathing, and dies *.

Very often white sloughs or specks, similar to the above, will appear in the mouth and throats of children and adults, without any remarkable feverishness either preceding or attending them. This is the lowest, and mildest, and safest degree of this disorder; which, excepting some degree of feebleness, and lowness, and sometimes a little pain, is attended with little inconvenience, and no danger †.

Lastly, the tonsillæ are swelled, inflamed, and beset with specks at the same time, and afterwards suppurate; when this happens the pain is very great, and, with the swelling, continues after the white specks have disappeared, till the abscess be broke. This indeed is a troublesome circumstance enough, but very remote from any danger. And in the management of such a mixed case, it is much safer, as Dr. Fothergill observes, to run the risk of a harmless suppuration, than to incur any greater mischief, which evacuations may easily occasion.—Indeed, when the angina maligna was properly treated, the throat became thereby more painful; and this, with a firmer and slower pulse and a breathing perspiration, was no inconsiderable sign of recovery. For as this disorder generally began with some degree of erisipelatous inflammation, and degenerated into a gangrenous disposition; by a proper use of internals and external ap-

* *Ulcera tonsillarum in infantibus periculosa*———*Ulcera proserpentia circa fauces, graviora & magis acuta, ut plurimum spirandi difficultatem inducunt.*

† *Ulcera in tonsillis extra febrem facta, securiora sunt.* Hippocrat. de Dentitione Liber.

plications, the motion and consistence of the blood being restored, the disposition in the throat became again in some measure inflammatory, by the restoration of motion in the vessels of the parts, or by the effort of life to cast off the sloughs.

In the mildest species of this disorder, a cure was easily effected by external applications alone; such as detergent and antiseptic gargles of tincture of myrrh, oxymell. simplex. spir. of vitriol, with cyder or water; and fumes of distilled vinegar boiled with powder of myrrh and honey; camphorated epithems under the throat were extremely useful.

In the more severe and dangerous species, whether so naturally, or rendered such by a wrong use of medical instruments, not only these externals were necessary, but also the internal use of mineral acids in the patients drinks, with camphire, myrrh, confect. cardiaca, and the bark; in children who refused the bark by the mouth, I injected it by glysters, and found it answer my expectations as well this way as in the other. I soon perceived, that neither the extract, nor tincture, nor even the decoction, unless extremely strong, were equally to be depended upon as the substance of the bark in this disorder*. And when given in a fine powder, to the quantity of half a dram to an adult, once in two or three hours,

* Dr. Sydenham strongly recommends the bark in the aphthæ, a disorder in its nature very analagous to the fore throat with ulcers. V. Swieten, at first doubtful of his remedy, was by its happy effects convinced of the truth and merit of Sydenham's observation. Comment. Vol. 3. But so far as I know, the bark was first publicly recommended for the malignant fore throat, in a paper published in the Gentleman's Magazine, November 1751, by the celebrated Dr. Wall of Worcester, as the practice of the faculty there.

was more to be depended upon in the worst cases, than any other remedy ; though in many cases it was not necessary. Nor was it less effectual when the glands were much tumefied, in removing (with the assistance of external applications) the tumefaction, than the sloughs. A fact which will now be hardly doubted, since we find by unexceptionable authority, the bark has been found useful in removing simple scrophulous swellings, as well as in healing the ulcers of such a habit of body *. Besides these medicines, red Port wine was used with such liberality as is unexampled in any feverish disorder, and yet with such advantage as fully justified its use. Dr. Fothergill observes †, that the free use of aromattick medicines made the pulse slower in this disorder than it was without them. Wine had the same effects, the pulse became slower, and lost that *soft fluctuation*, which shewed how weak the impelling force of the heart was without such assistance. It was moreover very useful in keeping the body from being loose, which was highly necessary during the process of cure at least, and when this did not suffice, it seemed safer to use the powder of cascarill. with lign. Campechens. and tormentilla in decoction, than to have recourse to the opiate astringents. I observed that the air of a warm chamber was at all times necessary to aid the operation of these medicines ; without which the disorder either gained ground, or the patient suffered a relapse into a state from which he was just recovering. Indeed

* See the Art. 18 and 26 of Vol. 1. of Medical Observations by a Society of Physicians in London.

† See Dr. Fothergill's Account of the Sore Throat with Ulcers.

relapses were very frequent in this illness, but none were more subject to them than children and adults of a weakly and highly scorbutic habit of body. These relapses often ended in a real phthisis. Riding abroad and asses milk were the best remedies for removing and preventing this catastrophe. In fine, this disease differed essentially from most other putrid continual fevers, which under any method have a certain and determinate period to run, in this; viz. from whatever time patients labouring under the angina maligna began to be properly treated, that was the patient's critical period, for from that time the disorder began to decline, provided the patient's strength had not been irrecoverably sunk; and no asthma with intermitting pulse, arising from a polypus, or from a deformed chest, produced contra indications which made every precaution ineffectual. Convinced that all evacuations, except moderate perspiration, were hurtful during the course of this disorder, I was cautious of allowing strong purges to expel the reliquiae morbi, even after a recovery; and I am not persuaded there is any thing besides a little rhubarb, or flores sulphuris, or cremor tartari, necessary, which may be combined with the pilul. gummos. myrrh, and the bark.

From an attentive comparison of the different appearances in the angina maligna, with a disorder treated of by that excellent yet obscure writer, Aretæus Cappadox, in his first book De Morb. Acutor. Signis, Causis, et Curatione, Cap. IX; the first of which is entitled *Περὶ τῶν κατὰ τὰ παρισθμιά εἰλην*. The second,

Θεραπεία τῶν κατὰ τὴν φαρυγγίαν λοιμικῶν παθῶν. * Struck with the resemblance of circumstances, I cannot but think with M. G. Severinus, and Dr. Huxham, that these disorders are in fact of the same kind; proper allowance being made for the difference, which the temperate heat of our climate, our peculiar method of life, and the differences of our constitutions and diseases, will necessarily occasion. The descriptions Hippocrates has left us of the pleurisy and peripneumony do not more agree with these disorders as they occur in modern practice, than the angina maligna corresponds in most

* The following passages, will support what I have advanced concerning the analogy of this disorder and the angina maligna of our times, but as pestilential diseases are in general more severe in countries lying near the equinoctial line, than in these northern climes, so also this pestilential affection of the throat, by some of its effects and symptoms mentioned by Aretæus, and omitted in this citation, seems to have been severer than ours. Dr. Fothergill has justly observed, that the same disorder, about a century ago, raged with greater severity in Italy and Spain, than it has at all done with us. But degrees of greater and less do not alter the genus of any thing.——“*Ulcera in tonsillis fiunt, aliqua familiaria, mitia, non lædencia: aliqua aliena, pestifera, necantia. Mitia quidem sunt munda, exigua, non alte descendencia, non inflammata, dolorem non excitantia. Pestifera sunt lata, cava, pingua, quodam concreto humore albo, aut livido, aut nigro fordentia. Id genus ulcera αφθαῖ nuncupantur. Si concreta sordes altius descenderit, affectus ille εσχαρα, et est, et vocatur.——Si interius in os depascendo serpit, ad collumellam usque pervenit, ipsamque exedit, et linguam etiam occupat, et gingivas, et fræna, id est dentium alveolos: Dentisque labefactantur et denigrescunt: In collum etiam phlegmone erumpit: atque isti, haud ita multis diebus post phlegmone, febribus, fætores, inediis consumpti intereunt. At si in pectus per arteriam id malum invadat, illo eodem die strangulat. Pulmo et cor neque talem odoris fæditatem, neque ulcera, neque saniosos humores sustinent, sed tussis spirandique difficultas enascitur.*” De Morbi Acut. Signis et Causis Lib. 1. Cap. IX. “*Si ab his, (ulceribus) sanies ad interiora destillat. celeriter partes, etiam si integræ erant, ulcerantur; celerrimeque ulcera interius depascendo serpunt atque hominem perimunt.*”——“*Medicamentis igni similibus quo depastio coërceatur, et crustæ decidant, utendum præcipio. Ea vero sunt, alumen cum melle, Galla, Ballaustium.*” Aretæi De Morb. Acutor. Curatione, Lib. 1. Cap. IX. Edit. Boerhaav,

respects with the *αφθαις* *ἔσχαρα* of Aretæus. The ancient as well as the modern disorder chiefly attacked children of both sexes; and both appear to be equally concomitants, symptoms or effects of putrid and pestilential disorders of the worst and most malignant kinds.

The fine summer weather we enjoyed in 1753, absolutely removed this malignant febrile constitution, and the gangrenous fore throat.—These disorders were seldom or never met with in the years 1754 and 1755—And other maladies arising from an inflammatory viscosity in the blood again appeared: But no epidemic of any general note happened till the year 1756.

The summer weather of 1755, upon the whole, a wet one, was extremely variable; sometimes very hot, and sometimes very cold. In the beginning of November happened that dreadful earthquake which laid Lisbon in ruins, which shook the whole Atlantic ocean, which was felt from Africa to the remotest coasts of Europe; and affected lakes, ponds, and rivers throughout the British isles in a very remarkable manner. Precisely at the time which corresponded with the general commotion, in a profound calm, the waters of Severn, and some fish-ponds in our neighbourhood, were tossed and agitated, in a manner very extraordinary to the spectators. This winter was throughout excessively rainy and open, with extremely little frost: One of our principal streets, and the low grounds lying N. and S. of us, were overflowed with water almost the whole of this time; yet, excepting a dysenteric flux, which about Christmas

was

was pretty common, no disease had generally prevailed hitherto since 1752-3.—In February 1756, the weather began to be very fine, and continued dry, serene, and warmer than is usual at that season, to the middle of March—The trees began to put forth leaves and flowers in abundance—But the buds were nipt, and the flowers, with the hope of fruit, absolutely destroyed, by a sudden alteration of the weather about the middle of March, which from this time continued uncomfortably cold, and extremely variable almost to the end of May; being by turns cloudy, frosty, snowy and rainy to excess.—In the beginning of summer, a great number of large beetles, not unfrequently the harbingers of epidemic illnesses, devoured the fresh sprouting leaves.—The whole summer and beginning of autumn continued extremely wet and rainy.—Fruit was never more scarce.—The seasonable maturation and gathering in of the corn crops, was obstructed by the long heavy rains.—The dearth of corn increased very fast.—And a dangerous malignant, contagious fever, which first appeared in April, was now become very epidemical, not only here, but in many other parts of the W. and N. W. of England. September was dryer, and gave time for gathering in the diminished and damaged crop.—In October, the weather still continued dry, serene, and frosty.—Our fever was greatly checked in its progress and frequency; The measles at this time went through our town and neighbourhood.—The children commonly got over the usual course of this disorder; but vast numbers died tabid of its consequences. The chin-cough succeeded the measles.—From the beginning

ning of November to Christmas, the weather was very foggy, cloudy, hazy, rainy, and without frost—Our malignant fever appeared again with renewed force, and continued very frequent throughout the remainder of the year. But the long continued frosts, which began with the present year, gave an effectual check to its progress; and it has but very rarely appeared since that time.—Apthous ulcers, and the malignant fore throat, have, since this fever set in, been more frequent, than in the three former years; but have not had any thing like a general course, and have only re-attacked persons formerly subject, or some few others greatly disposed by the frame of their bodies to produce such disorders.

The fever which prevailed during this remarkable year, was very evidently contagious, for whole families were either all-together, or one after another, seized with it. Those that visited or nursed the sick in one house, often carried the distemper along with them to other places, and were seized with it themselves.—Others, on the contrary, who never came near the sick, were affected with the same kind of fever. It prevailed chiefly in poor families, where numbers were lodged in mean houses, not always clean, but sordid and damp. It seemed to affect such poor families most, where there was reason to think a sufficiency of the necessaries of life, on account of the dearth, had for some time been scantily supplied; yet the other poor persons, given to the intemperate use of malt liquors, and ardent distilled spirits, were observed to be very much liable to its influence: And not a few persons in easy circumstances of life, were affected with this fever like others. No time of life

was entirely exempted from its violence ; for children, who were otherwise little liable to it, were frequently infected by their parents, and underwent the same dangerous symptoms as they. Persons from ten to fifty years of age, seemed more subject to it than others : And very old people much less than those in any other stage of life. Women in general were more liable to it than men ; such also of that sex as were of a pale and fallow complexion, and had the menstrual flux in any degree less copious, and obstructed : those who approached that period of life when this evacuation naturally stops, or were in lying-in circumstances, especially if at the same time of a lax and cachectic habit of body, were in general the frequent subjects of this distemper.—It is no new, and certainly a very just observation, that persons who have fine dark brown eyes, are more than others subject to epidemic fevers, as they were in fact to this.—Those of either sex, who had laboured under any low or slow distemper, proceeding from a scorbutic acrimony of blood, and from lax vessels and nerves ; such as had been greatly weakened by a great loss of the salutary and nutritious humours, or laboured under a fulness of bad juices, from any cause whatever, were all very liable to this disorder.—It happened in this, as in many other diseases of the same nature, that an exceeding fear to catch, and uncommon care to shun it, prepared only such anxious persons to receive it, with more than ordinary danger.—Natural low-spiritedness, and uneasiness of mind, though not proceeding from any fear of this distemper ; but grief, anxiety, dejection,

tion, or solicitude, from any cause whatsoever, were observed to have a great influence in disposing those who laboured under them to catch this disorder ; on the other hand, serenity and joy in general, and a magnanimous neglect of supposed danger, were among the best preservatives from it.

In many, this fever was preceded by certain symptoms, which seemed to indicate that its cause had been for some time lurking in the constitution, before it appeared in its genuine form. I was informed by many I had occasion to attend, that they had for many weeks, or perhaps months, laboured under an uncommon depression of spirits, which they could not account for, and felt their strength gradually abate, with great lassitude, and very often a great proneness to faint away, till the time this fever appeared with its proper symptoms.—The seizure of others was more sudden, less connected with predisposing constitutional causes and forerunning symptoms. An intercourse with persons labouring under this disease, for the most part could be traced, and there was no reason to doubt, but that they generally caught it by contagion, which is sudden, and extremely uncertain in its attacks.

There was great variation in the symptoms of this fever, arising from the different constitutions of the patients ; and still greater in the degree even of those symptoms which were uniform in their kind : This makes it necessary to arrange these feverer and milder attacks, into separate departments ; beginning with the severest, that this may serve as a measure, with which the rest may be compared.

1. During the first and second days after the first attack, most persons were by turns chill and hot, and shivered very much—Though, in very many, the heat which followed the first horror and chillness, did not abate till the end of the fever. Very severe pains about the joints, and especially in the small of the back, and foreness in the bones, are generally complained of more at this time than any other of the fever. Great faintness and oppressive weight about the præcordia, unremitting restlessness and watchings attended these beginning symptoms as well as the following. After the second or third days, a head-ach and nausea, more or less complained of from the beginning, encreased into a continued vomiting of every thing that was offered either as food, drink, or medicine, especially any thing of this kind that is disagreeable and foetid, was certainly thrown up, and encreased the patient's uneasiness.—Along with the vomiting the patients complain of a kind of painful scalding heat at their stomach, which is encreased by every thing swallowed down. Others feel every thing to stop at a certain part of their stomach, and giving great uneasiness till rejected by vomiting. After the stomach is emptied of its contents by the first efforts of vomiting, very little is thrown up besides what is drank, sometimes indeed the rejected matter continues more pituitous and bilious, and, in some, green as verdigrease. This violent complaint is generally preceded and attended with obstinate costiveness, and the sick are greatly troubled with eructations and borborygmi: But no symptom is more complained of, at this time, than the head-ach, which absolutely

pre-

prevents all compofure and reft, and makes the patients difmally pronounce often too truly their own fate, viz. that they muft either be diftracted or die.—This vomiting and cephalalgia were always moft fevere when the body was moft coftive, and was not eafily moved by glyfters and fmall dofes of rhubarb—And very feldom yielded to this or any other method; and when this was the cafe, a fatal prefage might with great certainty be formed concerning the event of the difeafe. The pulse was, from the beginning, very fmall, quick, and unequal, and became ftill lower and more unequal in the continuation of the difeafe.—The tongue fometimes is furred and black, often of a red inflamed crimfon colour, although moift at the beginning; as the diforder encreafes, becomes torrid and parched.—The face is flufhed, and often, by the ftrainings; blood is plentifully forced from the noftils, but without relieving the patient.—About the 7th, 8th, or 9th days of the difeafe, the head-ach begins to abate, and the patient becomes confufed; the urine becomes pale and more limpid than ufual.—The vomiting, hitherto unconquerable, ceafes of itfelf, and every drink, and every naufeous medicine, is as certainly retained from this time, as things of this nature were before thrown up.—The patients, now light-headed, think themfelves better, and are often thought fo by unexperienced obfervers; but the delirium encreafes, the eyes look wild, and often red, and a *subfultus tendinum*, phrenfy, and perpetual tossing, come on; the tongue, if not before, becomes now parched, chopped, and dry; the patient, before thirfty, is no longer defirous of, and refufes drink;
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the urine grows more limpid ; the pulse more irregularly quick and low ; urine and stool, extremely foetid, are involuntarily emitted ; the face becomes ghastly, sunk, and livid, and is distorted into a hundred different ghastly forms, by the spasms of the muscles : small livid petechiæ are disseminated over the skin : the arch of the palate, in the beginning of the disease, of a crimson colour, now becomes livid and excoriated, and sometimes, before death, a gangrenous blackness arises deep from the œsophagus, and spreads to the glands and palate. The patient sweats profusely, and is seldom cold till death is at hand. An abominable cadaverous stench in his breath, perspiration and stools, is offensive and dangerous to the attendant. The patient's voice is remarkably deep, low, and trembling, when any voice at all can be heard. Death happens for the most part about the 12th, 13th, or 14th days, and sometimes later, if the patient's pulse remained full, and his strength was great.

This fever, however generally fatal, as above circumstanced, did not prove constantly so. For, in some few singular instances, where the vomiting and head-ach admitted of some mitigation in the beginning ; the body was moderately open ; the pulse remained full and constant, and the breathing sweats and patient's strength were kept up : The sick, after remaining a long time trembling, convulsed, senseless, comatous, delirious, as it were in dreadful equipoise, upon that narrow line which separates life and death, would begin to recover after the 20th or 25th days ;
but

but for months would continue in a very weak condition.

2. Others, attacked with this fever in a degree less severe, complained in the beginning of shivering, interchanged with heat; of lassitude, weakness, languor, pains and soreness in the back and limbs.—The pain in the head, and nausea, were generally complained of by these patients; but as the first was not so remarkably severe and constant as to prevent sleep and rest entirely, so a retention of every thing was not prevented by the last; as happened in the worst state of this disease. The pain in the head was much less acute, and attended with some stupor, with a ringing voice in the ears; which often changed into deafness, and ended in a coma.—The nausea and vomiting were easily removed by administering a gentle emetic in the beginning, which for the most part operated downwards, as well as by vomiting.—A natural, or artificial looseness, procured by mild purgatives and glysters, was found very speedily effectual in removing the cephalalgia: The sick were sometimes restless and watchful; others dosing and disposed to sleep.—Some were seized with remarkable faintness, giddiness, and dimness of sight, upon attempting to watch or sit up, who found their spirits very good in a lying posture.—Others bore an erect posture very well, and seemed to elapse easier, in some instances, from very dangerous symptoms, than others who were too closely confined to their beds. Towards the 10th day the patients became delirious, or comatous; the delirium in this case was neither raging nor constant: In most cases, the patients
nerves

nerves trembled all over; nor was this a very bad sign; certainly the *subfultus tendinum* was much more ominous. The pulse was very variable in this illness, but most generally was higher and fuller in the beginning, than towards the heighth: the tongue was generally moist and white, though frequently of a crimson colour, and, at the heighth, dry: the urine, in the beginning, often turbid, sometimes with a sediment, more generally clear and high coloured; became at the heighth clear, yellow or straw-coloured, and continued so after the crisis, without sediment. If more perfectly limpid, a *subfultus tendinum* was superadded to the other symptoms. Many, though not every one, had the skin all spotted with small crimson-coloured or livid petechiæ, which appeared at no certain time of the disease —In some few others towards the heighth, a critical eruption of white, watery, or crystalline, and red miliary exanthemata appeared upon the skin: These were attended with a copious sweat of a peculiar smell, which it was necessary to support. In some, at the height of the disorder, the palate was excoriated and of a crimson colour,—In some the tonsils were beset with aphthous sloughs.—In others the back part of the palate, tongue, glands, and uvula, was all covered with one continued aphthous crust; this soon returned when scraped off, and the flesh beneath was perceived to be livid and raw. With miliary eruptions, or these appearances in the throat, loose stools sunk the patient's strength more than in any other circumstances. About the 15th day the fever was generally at its heighth. The sick was very restless and delirious,

tious, or perfectly stupid, with tremors or subfultus tendinum. Upon these symptoms, a rigor supervenes, and ends in cool moderate sweatings; and composure and rest follow: This proved for the most part a favourable crisis; even where sensible perspiration was hardly promoted, the recovery commenced from this time; the pulse became slow and full, the senses returned, the sick slept regularly, the body was soluble, and soon after an appetite for food disposed the sick to eat. The miliary eruptions were critical to the few that had them; the flat livid petechiæ appeared at all times of the disorder, and were symptomatic only.

3. But many had the good fortune to be seized with this fever, much more favourably than those who were attacked as in No. 2. Some such were suddenly seized with a dysenteric flux, of putrid, bloody, and serous stools, voided with great pain; this arose, for the most part, from the taking in of the contagious effluvia by such as attended the sick*; and by this sudden effort of nature, the poison was expelled; and under proper care extended its dire influence no further than the primæ viæ.

Many were seized with a slight chillness, with rheumatic pains all over the body, but very wandering, and of short duration; the sick had little thirst; but were universally low, weak, and had towards the evening an increase of sickness and head-

* In this manner I was infected myself, and from me a near relation received the disorder the next day. — Want of rest, great fatigue and cares, seemed to be the causes why I was now infected rather than before this time, having long been exposed to the same external causes in my attendance upon the sick.

ach, but neither severe nor constant: Some were seized with short fits of severe coughing.—The pulse at first full and hardish, became of itself in a few days soft and undulating and low.—Many bore an erect posture very well; others became giddy and faint by it; others were seized with heat and weakness creeping insensibly upon them, attended with lowness, want of appetite, lassitude, and restlessness, and with some degree of giddiness, stupor, and head-ach in the slightest degree.—All then universally complained of lowness; which was always encreased by bleeding; tho' sometimes the pains and cough seemed to require it, and the fulness of the pulse to allow of it: And the disorder, though slight, seemed to run on a longer time, in consequence of this evacuation, than in others, who with speedier success in the same circumstances were easily cured, by having the body kept soluble by glysters and rhubarb; and by encouraging perspiration, with gentle antiseptic and cordial medicines joined together. Persons in this way were seldom confined in bed, though their weakness often required them to lye upon it, and to keep themselves in a close room.

In every degree of this disorder, lowness, debility, restlessness, nausea, head-ach; a general propensity to a coma or delirium; the foetor, and contagious nature of the excretions, seemed to be its distinguishing and characterising symptoms.—Respiration was in few cases affected till the near approach of death; excepting in the winter, when the putrid fever was often complicated with peripneumonic and pleuritic symptoms; yet these bore bleeding less than is usual,
and

and the buff, or size upon the blood, had a very peculiar saffron hue, from the mixture of red or serous globules.

This fever was undoubtedly of the putrid continual kind, and, excepting that exacerbation which happens in all fevers during the nocturnal hours, was without any regular and alternate remission that could be observed. Its duration was uncertain; those who were affected in the worst manner, often died before the fifteenth day; yet few began to recover till that time, many not till after the twentieth, or twenty-fifth days of the disease.—The crisis was not attended with any large evacuation of any kind.—An irregular pulse, universal tremblings, spasms, restlessness, delirium, a deep coma, and profound insensibility and stupor, with a sunk almost Hippocratic countenance, were the appearances which characterized for the most part the *turbæ criticæ* in this malady. The trembling generally ended in a cold rigor, after which a gentle sweat, and a bilious stool or two succeeded; from this time the pulse became fuller, slower, and more regular; the patient, for the most part, became sensible the same day, or the next, sometimes indeed later; the tongue cast off its black and gangrenous parched crust, and a fine coloured new flesh appeared under it: After a crisis, the natural returns of strength were extremely slow, and it was often a month or more from the turn of the fever before they could creep abroad, and much longer before they compleatly regained their former strength.

The common prognostic signs in other fevers, were many of them applicable to this, but none more,

than that general maxim, by Celsus translated from Hippocrates; * “ Neque ignorare oportet in acutis
 “ morbis fallaces magis notas esse, et salutis et mor-
 “ tis.”

If, (as in No. 1.) the head-ach was excessively severe, and the vomiting such as no art could quell in the beginning of the disorder †, and the patient complained much of borborygmi and flatulent eructations; and the tongue, pretty early in the disease, became black and parched; from such symptoms, the patient's danger and death might with great certainty be foretold. And though I was not so happy as to meet with an opportunity of satisfying my curiosity, by opening any body dead of this fever, I am persuaded the obstinacy and concatenation of these dreadful symptoms (No. 1.) arose entirely from spots scattered over the internal surface of the stomach and small guts, at first erisipelatous, afterwards gangrenous, and at last truly sphacelous.

In this opinion I am confirmed, by the analogy or rather identity of the disorder I have described, with that which raged in the beginning of this century at Hall; and also at Rouen in 1753. In the dead of these fevers, the stomach and small guts were found, by the anatomical industry of that glory of the medical

* Hippocrat. Aph. § 2. Art. 19. Celsi. Lib. II. Cap. vi. “ Si-
 “ quidem etiam spes interdum frustratur, et moritur aliquis, de
 “ quo medicus securus primo fuit. Quæque medendi causa reperta
 “ sunt, nonnunquam in pejus aliquibus vertunt. Neque id evitare
 “ humana imbecilitas in tanta varietate corporum potest.” Ibid.

† “ Vomitum cum singultu per totum fere morbi cursum obser-
 “ vavimus lethalem. In nonnullis funesti ominis, liquidi vel cibi
 “ assumpti, iterum levioere motu corporis, in os, cum murmure et
 “ borborygmo, eructatio, visum symptoma,”

art, the late Dr. Hoffman, and the celebrated Dr. Le Cat *, perfectly sphacelated.

On the contrary, when the above symptoms were milder, and the vomiting especially could be kept within bounds, and the symptoms were such only as are mentioned in No. 2, 3, there was in general, from a proper treatment, the greatest probability of amendment.

A spontaneous openness or looseness was from the beginning a salutary sign, and freed the patients from a great deal of danger, abated the pain in the head, and the vomiting; by this means also the ferocity of the delirium was abated, and sometimes totally prevented: About the crisis, bilious stools were always of the most signal relief to the patient, and instrumental in the recovery.—In some indeed the stools were watry and bloody, like the washings of flesh, and though useful to the patient in abating symptoms, did not always secure a recovery. This also was sometimes the case, when that evacuation was rather the effect of art, than the simple effort of unassisted nature; but in this case it seldom failed to abate some of the most dangerous symptoms, even to those patients in whom the violence of the disorder, or the

* — “ Vidi imprimis hoc cum singultu per aliquot dies in viro honorato, in quo instituta post mortem sectione, hepar in concava parte plane putridum nigrum, instar picis, necnon in diaphragmate, duodeno et parte pylori, sphacelosa comperuit corruptio.” Hoffman. *M. Syst.* Tom. 2. p. 81. *Obs. De Febre Maligna petechizanti*, An. 1609 et 1700 *Halsæ Epidemica*. Dr. Le Cat observed in the villous coat of the œsophagus, stomach, and small guts, cristalline eruptions, inflammatory and gangrenous spots, in those who died of the malignant fever of 1753, at Rouen. *Phil. Trans.* Vol. 49. Part. 1. Page 49.

lateness of the remedy, rendered it in the end ineffectual. Indeed, as the seat of the disease was not solely in the primæ viæ, an evacuation from thence could only give partial relief.

The urine, in this disorder, was for the most part too fallacious a sign to be depended upon.—It was, from the beginning of the fever, high coloured, and even settled with a white or crimson sediment.—About the height it became constantly clear, and straw-coloured, or yellow, and continued so*; and the patient's recovery went on well, without any symptom of relapse, or other inconvenience resulting from, or connected with, a want of sediment at this time. But a urine perfectly limpid, or nearly so, was, be-

* These phenomena of the urine, though clashing with the observations of antiquity, concerning the appearances of urine in their fevers, may perhaps be reconciled therewith upon the following principle. In continual fevers of the inflammatory class, a crisis is most probably brought about, by a resolution of the too dense particles of our fluids, analagous to that which sometime, carried to excess, causes malignant, putrid, petechial fevers: Of this resolution of the blood globules (so as to cause the return of health in inflammatory fevers) a sediment in the urine is an effect and sign. In putrefactive fevers, the blood is still more melted down, and mixed in the urine, gives it that turbid appearance, sometimes with, sometimes without sediment; which appears generally in the very beginning of such fevers, giving a very dubious omen of their event; but a turbid urine shews a greater degree of dissolution in the humours, than a mere sediment, which must be heavier than those particles which remain mixed in the urine. A clear yellow urine, at or after the height of these fevers, is rather then a salutary and promising appearance in them; shewing the contexture of the blood is as much inspissated, as the health of the individual requires, and that the dissolved and dissolving parts of the fluids, or the morbid matter of these fevers, in other words, is thrown off, or altered: But these are only my conjectures concerning a fact which is very certain; and was observed by Hoffman at Hall. Loc. citat. in the Epidemic of 1700.

fore the height of the disorder, always a sign of delirium, or approaching subsultus tendinum.

The generality of persons who recovered from this fever, had rather a gentle increase of perspiration about the crisis, and a few days after, than any remarkable profuse sweatings.—Those who died, sweat much more profusely than the generality of those who recovered from this illness.—Such indeed as had the skin rough with miliary eruptions, could neither bear the alvine evacuation so well, and required that a pretty plentiful sweating should be supported; the sweat of such persons has always a peculiar soap-like smell.

The miliary cristalline eruptions, gave great relief to the patients; and their repulsion, or falling back, was dangerous.—The flat, livid, petechial spots are rather a consequence of the general resolved state of the blood, than in any respect critical; yet it is much better for these to appear upon the skin, than to be scattered over the villous coat of the primæ viæ, where they may become gangrenous and mortal.

Some who had been most severely handled, had, after the crisis, a numerous eruption of angry suppurating boils all over the body.—Towards the crisis blisters dried up, but after this was happily over, they began to run again plentifully.—When the strength was sunk very low, a kind of gangrenous vibices were often observed in the blistered parts, which easily suppurated off: Gangrenes of the hips happened in some, occasioned by the long pressure of the body upon those parts.

The

The natural returns of the menses, in the course of this disorder, did no apparent good; and in women who, in child-bearing circumstances, lay ill of this fever, the early and entire stoppage of the lochia, did no visible harm; and they often recovered very well from circumstances of great danger. One of these women had lain ill of her fever one week before she was delivered of her child; and began to recover in two weeks more after her delivery.—The case of another woman seems also not unworthy of particular notice: She had got over the acme of this fever in its most alarming circumstances, and was now in the declension of her disorder, yet was not perfectly sensible, and had her fauces all covered over with a white aphthous crust; she could not sit up without fainting away; in this very low condition, she suffered an abortion of an embryo about five months old; which I saw trembling and palpitating just as it came from her body; the secundine could not be extracted, because of the tenderness of the umbilical cord; and it was not thought proper to use any other method of extraction in her circumstances.—And till that came away putrified, she lost a considerable quantity of blood; which again rendered her case ambiguous.—But after that time she slowly recovered her strength, and is now well.

Bleeding was more generally hurtful than serviceable, by sinking the patients strength, and encreasing the vomitings, and hastening the delirium and convulsive twitchings of the tendons.—The cruor was loose in the coherence of its globules, and easily broke.—Sometimes it was covered with a buff or
size,

size, but with this the broken globules were so intermixed, as to give it the appearance of a saffron tinge.—The serum was of a dark dirty colour, betwixt green and yellow.—Such serum and cruor I have seen very exactly imitated in the blood of persons who laboured under the jaundice.

In this disorder then it appears, that the larger particles of the blood, the red globules being broken or divided, are confusedly mixed with the serum and lymph, or the thinner pellucid parts of our fluids, by some putrid ferment, either spontaneously produced in the body of the individual, or received from some other person by contagion. But as the great business of secretion, and some other of those wonderful operations, which support animal life and health, are principally carried on in the smallest vessels; and depend mainly upon such a condition of our fluids, and the small arteries; that the red globules do not pass into the lesser series of capillary arteries, which ought only to admit the discoloured pellucid part of our fluids; such as the serous and lymphatic arteries are *: It will not seem surprizing, that a loss of

* Upon the credit of Lewenhoëk's observations, it has been long believed, that one globule of red blood is composed of and divisible into six serous globules, and it has been presumed that a serous globule was composed of six lymphatic ones, &c. This doctrine is called in question by Dr. Haller, in the results of some microscopical observations, published Vol. IV. of the *Trans. of Gottingen*. He says no globules smaller than the red ones can be seen, nor does he think it can be known, that the union of six yellow globules constitutes one red one: but it is only a plain inference to suppose, from his not seeing the component parts of the serum and lymph, in his observations, that the lymph and serum consist of smaller particles, and enter smaller vessels, than red globules ordinarily do: This Dr. Haller allows. Indeed, lymphatic arteries have been demonstrated, ipso facto, by M. Ferrein, *Mem. de l'Acad. des Sciences*. 1744.

health so quickly ensues upon such a confusion of the different component parts of our fluids, as appears to have happened in the fever we have described. In common inflammatory diseases, it is supposed the globules of a viscid cruor cannot pass the small capillary arteries, which usually transmit single red globules.—In such disorders as these, the attenuated globules of a dissolved or partly putrified cruor, for that is the case, pass into serous and lymphatic vessels they ought not to enter, and in them are stopped; hence the vital, animal and natural functions are strangely disturbed; hence also spots and stigmata, and other analogous appearances in these disorders, seem to arise.—In the practice of medicine, it is of the last consequence to distinguish obstructions of this nature, ab errore loci, from those which are occasioned by a viscosity of the mass.—In that case, mere attenuating dissolving medicines, and heaters, unless associated with such things as powerfully check putrefaction, are certainly very obnoxious. The medicines which, in all ages, have succeed best, are such as be only in a very moderate degree warming, and yet astringent; such as preserve the consistence of our fluids, powerfully correct putrefaction, promote perspiration, and support the vis vitæ.

In this putrid fever it was not only necessary carefully to keep these intentions in view, but no less necessary to avoid every scope, which led into intentions incompatible with these. Thus it often happened in the beginning of these fevers, that the appearances, far from declaring the genuine nature of the disease, seemed rather more of an inflammatory
or

or rheumatic nature.—And for such it might easily be mistaken by an unattentive observer: Infection being a shaft which will imperceptibly penetrate the hardiest constitutions; viscosity of blood, the peculiarity of such constitutions, will remain in its usual state, at least in some degree, for a few days after the first attack; but certainly, in this case, we are not to sink the patient's strength, by letting blood, in order to remove a siziness, which by the action of the malignant poison upon it, will every day be more and more subdued, and resolved into a putrilaginous state, from which reason and experience require the physician to use his endeavours to preserve it: And if bleeding can seldom be used in any great quantity, when the blood itself has an inflammatory appearance—* much less can it be at any rate proper, when the size is not tenacious, but of a bluish lead colour, and fluctuating consistence; when the crassamentum is tender, and many of its particles remain confusedly mixed with the serum and lymph, and leaving a footy-like powder at the bottom of the dish.

For the most part, from the beginning of our fever, I found the pulse however quick; generally too low and soft, and fluttering, and the prostration of strength too great, to admit of venæsection; indeed the bad success I had several times seen the conse-

* Every one knows how generally Sydenham treats almost every fever as inflammatory; yet in the febrile constitution of 1673, 74, 75, he observes, that the blood had constantly an inflammatory or pleuritic crust; yet he found it would not admit of repeated bleeding with safety; and though he was somewhat perplexed at first with this disease, he at last refrained from that evacuation, and depended upon glysters and blistering, to divert the force of the disorder from the head; §. 5. cap. 2. Oper. Sydenham.

quence of this evacuation in patients, who notwithstanding had symptoms which seemed to require it, and the bad aspect of the blood itself, taught me that bleeding was neither generally useful as a remedy in this fever, and but seldom as a preparative for other remedies which were proper. Bleeding never relieved the pressure at the præcordia, the inquietude, and vague pains of the sick, or the fixed pain in the head; on the contrary, it increased many of these symptoms, brought on a lowness and irregularity of the pulse, and dejection of spirits, and hastened the delirium, which was afterwards insuperable by any treatment.— Thus, in a general way, it was hurtful to subtract any great quantity of the vital fluid; but if the patient complained of severe pleuritic stitches, and breathed strait, a small quantity might then be let with safety and advantage; as I experienced in those pleurifies, which in the winter season began to be super-added to the ordinary symptoms of this fever.

If bleeding was judged unnecessary, the first and most fundamental operation to be underwent, was to wash from the stomach to the bowels, the putrid lymph and bile supposed to be lodged there, by a disagreeable taste in the mouth, a nausea, vomiting, and head-ach, or giddiness; symptoms which were, in a greater or lesser degree, universal in the beginning of the fever; and seemed to be among the most immediate consequences of suspected contagion: The ablu-
tion of this primary fomes of the disease, was attempted before any thing else was done; either by giving the patient plentiful draughts of chamomile or carduus teas, in weak and mobile habits, where
greater

greater irritation might have done harm.—To those a little stronger, a dram of the tincture of ipecacuan. or the same quantity of the oxymel of squills was given.—When the constitution was still more robust, and there seemed a necessity for something more effectual, I ordered a grain of emetic tartar, and at most two grains, to which was joined a scruple or half a dram of vitriolated tartar.—Otherwise, a grain of emetic tartar was mixed with a little oxymel sypmplex, or oxymel scilicet. in a draught.—But whatever the ingredients were, I found it of the greatest moment to give these emetics only in very small and refractory doses.—For nothing more was intended than such a gentle accession to the contraction of the stomach, as enabled it more effectually to reject its contents.—The more violent irritation, and strainings, which stronger doses would necessarily occasion, would defeat the original intention of allaying the nausea, by creating perhaps an inflammation in the stomach itself; for symptoms seemed to show, in many bad cases of this disorder, that something of this kind really existed. On this account, that the emetic, even in these small doses, might act with the least possible irritation, I ordered the dose to be mixed with a pint of warm water, which was drank off by glassfuls at small intervals. Thus I always found the strainings were extremely gentle, nay sometimes easier to the patient than the more natural efforts; the forces were in a greater quantity pumped up from the stomach; and the operation of the emetic was more determined downwards, for bilious stercoraceous stools generally followed, and gave the patient very great relief.—His vomiting

was, in a great measure, taken away, and the head-ach abated. The French call this method of giving emetics, *Emetique en Lavage*. In this manner M. Le Cat says, emetic tartar was given in the malignant epidemic fever at Rouen 1753; (which much resembled ours) with very great advantage. After the operation of the vomit is finished, the patient can use nothing better to settle the stomach, and quiet its spasms; than spir. nitri dulc. in mint water.

As this fever did not admit of bleedings to be generally used, and yet was so extremely prone to attack the brain, I ordered glysters very frequently to be injected; sometimes every day, at other times once in two days, as circumstances required; these were continued very near to the height of the disorder.—And it was proper to use them from the earliest attacks of the disease, especially if the patient was costive. The evacuation by stool, and the easy vent of flatus; the relaxation of the bowels, by the warmth and mollifying qualities of the ingredients injected by glysters, were certainly of the greatest benefit to the sick; and, by relaxing the coats of the abdominal vessels, and the descending aorta, the motion of the blood is facilitated downwards, the vessels of the brain being in consequence less distended: Hence the torturing pains of the head are eased, the sick are disposed to rest, and feel their strength refreshed. If the putrid fæces are long retained in the great guts, they will unavoidably feed the disease, by a resorption of some of their most putrid parts into the blood-vessels; the evacuation of what is thus baneful, by means in
other

other respects so salutary, is no small recommendation of glysters*. But their use is improperly confined either to evacuation, relaxation or dilution merely; for antiseptic, antispasmodic, stimulating, analeptic or febrifuge medicines, may be very advantageously administered in this way, when the patient's perverseness, or any disease seated in the stomach or œsophagus, hinders the ordinary manner of giving them: And as there is a strong resorptive power in the great guts, and a high degree of irritability and quick sensation, from the nerves distributed to the bowels; the bark, mosch, assafoetida, camphire, myrrh, and saline bodies, may be thrown up into them, with the same medicinal views and consequences, as when they are given at the mouth itself.

But it was also necessary, at due intervals, to give some gentle eccoprotic, in order to dislodge the putrescent matter from that large portion of the intestinal tube, which the operation of glysters could not so perfectly reach.—With this salutary intention, rhubarb, in very small doses, as five, six, or eight grains, was added to the other proper medicines, so

* The judicious Sydenham, in treating of the comatose fever of 1673, &c. which did not bear bleeding, although the blood, in the beginning of the disease, had constantly a glutinous or phlogistic appearance, depended very much upon the frequent injection of lenitive glysters: "*Illud stuporis phaenomenon, omnino indicabat, continuò reputanda esse enemata, quibus materia febrilis, quæ ita promptè caput petebat, ab eo divertentur; quin & venæsectioni repetitæ, quam ægri tulit propria hujus morbi natura, substituebantur illa, atque ejus pensabant defectum.*" Porro judicabam Epispastice. Vide Sydenham Oper. §. 5. cap. 2. De Febre Continua, An. 1673, 1674, 1675.

as to procure one or two lax stools daily *. Thus the offensive and putrescent juices, such as corrupted lymph, bile, chyle, and putrid fæces, which certainly augment those dreadful symptoms that constitute the danger of malignant fevers, were expelled the body, without sinking the patient's strength, or suppressing perspiration. It was constantly observed, that the delirium came quickly on, if the patient's body was not preserved perpetually open, either by this means or by glysters : I judged it best to use them both alternately for this purpose, till the disorder was past, or arrived at its height. But I never ventured to use any of the more vehement or active purgatives, which dissolve the crasis of the blood, stop perspiration, and greatly exasperate the febrile symptoms ; and against the use of such, as well as against large doses even of rhubarb, I would caution others, such being as certainly pernicious, as the former gentle methods are salutary, and approved by reason and experience.

However highly necessary 'twas, to keep the cloaca of the human body open, that the fordes, which are deposited there, and which are generated from the access of the atmosphere to our ingested food and liquors, might be freely evacuated ; yet this is but a part, and a small one, in performing that great bu-

* The following form, or something like it, was what I frequently used in pursuing this intention.

℞. Pulver. Rhei ppt. Gr. v—x. Sal. Succin.
Myrrh āā Gr. v. Pulv. Cortic. Peruvian. ℥i.
Aq. Cinnam. ten. 3x. Aq. Cinnam fort. Syr.
Croci āā 3ii. M. Haust. pro re nata sumend.

ness, the cure of malignant fevers : For the consistence of the mass of blood itself is to be corrected ; the separation of its morbid incorrigible particles to be encouraged, and the excretion thereof by the kidneys, but especially by the skin, is to be promoted.

Pursuing these views, after the emetic had finished its operation, I always ordered the patient to use some antiseptic sedative. Spiritus nitri dulcis taken to the quantity of a tea-spoonful in mint tea, or mint water, every three or four hours, will answer this purpose better than any of the neutral saline anti-emetic mixtures, which are generally ordered, and which I also tried, though with less success than followed from the dulcified acids. All these liquid sulphurs, for such in fact are the dulcified spirits of nitre, vitriol, and sea salt, and the anodyne mineral liquor of Hoffman, are certainly excellent remedies in malignant fevers of this class ; they allay that vomiting, which is for the most part increased by all other medicines, and correct putrefaction both in the stomach and duodenum, and also counteract the influence of the malignant virus, in the vascular system, by gently incrassating and preserving the texture of the blood globules. Sweet spirit of nitre in particular promotes very effectually the secretion of urine, and that of perspiration.—In these respects they are greatly preferable to the simple uncompound mineral acid spirits.—In a word, these dulcified acids possess the excellencies of the most celebrated alexipharmics *, without their pernicious effects and

* It is a very obvious conclusion, from the excellent experiments of Dr. Alston and Dr. Whytt, (Med. Ess. Vol. V. and Literary

and qualities ; and that in a very compendious and agreeable form. The salt of nitre itself has been recommended by some very celebrated authors in malignant fevers ; but the effects I have observed from it, have by no means recommended it to me ; though, in other disorders of the inflammatory kind, I am convinced we are unacquainted with a more excellent remedy. But, though given in the very beginning of these fevers, it sunk the pulse, and, without abating the heat, or any other symptom, the patients lowness and oppression and inquietude were increased by it. In fact, as this salt is known to resolve the blood globules, in the very manner they are resolved in disorders the most highly putrid, it does not seem a proper remedy in disorders simply malignant, but when, as is frequently the case, especially in the beginning of such disorders, an inflammatory sickness is combined with and actuated by a malignant miasma, nitre, if joined with camphire, after the manner of Riverius *, or with warming and diaphoretic medicines, according to the prescription and practice of Mead † and Hoffman ‡, may be given in the beginning of such diseases, with advantage. For thus the nature of the disorder being rendered more simple, and the method of cure unimbarressed with contra-indications, a recovery will afterwards easier

terary Essay, Vol. II.) of Edinburgh, that opium must be hurtful in disorders where it is requisite to support the vis vitæ, the vascular energy, and the motion of our fluids.

* Vide *Præceps Medicæ*, Lib. XVII. De Febri Pestilenti.

† *Monita & Præcepta Medicæ*, p. 24.

‡ J. Hoffmanni *Med. Syst.* Tom. 2. p. 77. ad passim secr. opera sua.

be brought about by such things as directly combat the malignancy, as was the method of speaking in the last century.

In the beginning of the fever, the spirits of nitre, frequently taken by tea-spoonfuls, in mint tea, or the patients common drinks, will answer every medicinal purpose, and may alone be depended upon: In the increase of the fever, when the vomiting is previously appeased, a little camphire may very advantageously and commodiously be added to the spirits of nitre, in the quantity of a scruple or half a dram to an ounce of the spirit: One tea-spoonful of these camphorated drops may be used once in two or three hours, in white wine or cyder whey, or whatever else is used by the patient as his common drink: Every one is apprised of the excelling antiseptic and diaphoretic qualities of camphire; but I have never seen any reason for thinking it so warming as is commonly supposed.

About the ninth or tenth days, the lowness increases greatly, and the delirium begins to come on, generally with tremblings, sometimes also with sub-sultus tendinum. I found it at this time generally necessary, to direct an addition of more warming, diaphoretic and antiseptic medicines to be made, to those formerly ordered*; such as the *pulvis contrayerv. comp. radix serpentar. sal succini vol*: A large blister was for the most part applied to the back, and was kept running by the repeated application of the
ung.

* It was the maxim of Baglivi *Prax. M. Lib. I. cap. xiii.*
 “ Quo febris magis ad statum vergit, eo minus utendum est refri-
 gerantibus,
 F 2

ung. ad vesicatoria, till the *αχμν* was past; and, where symptoms required, others were applied to the thighs and legs. I am sensible, that what is perhaps justly urged concerning the attenuating septic qualities of cantharides, may seem a valid objection against their use in these fevers: But in most cases, the stimulus rather raised the patient's strength and pulse, without increasing the delirium; and the patients were always the better for the discharge of morbid serum. Yet, in some bad cases, I will by no means conceal it, that blisters often apparently added to the ferocity of the delirium. I frequently tried the bark, both in substance and in decoction; but found it best to use only such a decoction as I have added at the bottom of the page*; which answered every intention that was requisite in this disorder; supported the patient's strength, and perspiration, and checked putrefaction. Larger doses of the substance lay heavy upon the stomach, and checked the salutary excretion of perspi-

gerantibus, ne per ea crisis impediatur." I often used these more warming medicines, as in the following formula about this time:

℞. Camphor. por. ℥ii. Sacch. alb. ℥ss. contritis
adde Acet. stillat. vel spir. nitri dulc. ℥i. Spir.
Minder. ℥ii. Pulv. Contray. C. 3iss. Tinct.
Serpentar. ℥i. Aq. Alex. Simpl. ℥vii. Mix-
tura. Cap. Coch. ii. omni quarta vel sexta
hora.

* ℞. Pulver. subtiliss. Cortic. Peruv. 3iii. vel ℥ss.
Rad. Serpentar. 3i. coque ex Rect. Destillat.
℥i. ad ℥ss. Colaturæ, cui adde Sal. Armon.
vol. facc. q. f. pene ad Saturationem Pulv. Con-
tray. comp. 3i. Aq. Cinnam. fort. Sacchar.
alb. āā 3i. f. Mixture de Qua Cap. Coch. ii.
tertiis vel quartis horis.

ration;

ration; yet neither shortened the course more, nor abated the severity of symptoms so well, as that light diaphoretic mixture, which was used, and is here recommended, as a preparation of the bark, most suitable in such malignant fevers as these, in which the delirium runs high; and in which nature is to be encouraged and supported in exerting the force necessary to bring about a salutary crisis, and a separation of the morbid from the salubrious particles of our fluids. This work, so wholly her own, may be improperly disturbed and checked by large doses of the bark, when the genius of the disease is such, as not to admit of an entire and immediate cure by that noble antidote.—But in these continual putrid fevers, attended with a delirium, I have rarely seen the bark useful as a febrifuge; though in small doses, as a strengthener, it will produce very good effects; and, in the decline of such fevers, is useful in restoring the patients health and strength. Indeed when aphthæ began to appear, either as white sloughs, or as a crust, or as an excoriation, with a lividity of the palate and glands, about the height of this fever, then larger doses of the bark, in substance, with elixir of vitriol, and red wine, were highly useful and necessary; and loose stools were rather to be restrained, for they very remarkably sunk the patients strength, either in these circumstances, or after an eruption of crystalline miliary eruptions.

The symptoms which required a particular attention and treatment, were in the beginning the vomiting, for which, after a gentle puke, I ordered the
 patient

patient to use spir. nitri dulc. in mint tea, or water, or cinnamon water. In order to subdue this symptom, which was in a great measure the foundation of the patient's future welfare or disaster, I found an epithem of ther. androm. spec. aromat. and oil of mace and nutmegs, applied to the stomach, peculiarly useful.

The head-ach, and watchfulness attending it, were also extremely troublesome and dangerous symptoms, at the beginning of the severest kind of these fevers. I ordered the sick, for the most part, to use the pediluvium, or fomentations of flannels wrung out of warm water, to be applied to the feet and legs : And a liquid epithem, composed of camphire, ol. Rhodis, acet. stillat. and spirit of rosemary mixed, was frequently rubbed about the patients's forehead and temples, and afforded to very many, great relief.—When the delirium came on, cupping, blisters and glysters and fomentations were used, with proper internal medicines before mentioned. If a subsultus tendinum appeared, musk, castor, the volatile tincture of Valerian, neutralized with sal succini, were tried, and sometimes with very good effect, against this otherwise fatal symptom. In many doubtful cases, where the stupor and delirium was very great, and nothing very effectual had been done earlier ; I often gave the antimonial wine, which, by promoting perspiration, urine, and stool, often gave relief, at this time, and under such circumstances of the disease ; but very often also, its operation was ineffectual, or produced no good effect upon the patient, that could be observed. Whoever considers the nature of this excellent and
active

active remedy, and of others of that kind, will agree, that the promiscuous use of things of this sort, cannot be proper at all times in fevers which have their critical periods, nor in all circumstances. For, in the antimonial wine, the metalline particles of antimony are held in a dissolved state; and, though amazingly subtile, are of an unconquerable rigidity. Hence they retain their activity and force, not only in stimulating the first passages, but in acting in the same manner, upon some of the finest secreting vessels of the human frame; hence those small doses, which do not puke or purge, will operate either by urine, or by encreasing perspiration: How far its effect of promoting a salutary crisis, may be owing only to the encrease of these excretions, or to its more immediate influence upon the fine canals, which serve as secretory to, or are nearly connected with the nerves themselves, let others judge: In the mean time, the excellent effects of antimonial medicines, in chronical diseases of the brain and nerves, gives room for such a conjecture.—But, whatever be its primary operation, it is certainly, being impertinently officious, if not too often dangerously so, to give such medicines when nature requires no evacuation, or before she has prepared the matter to be evacuated, and disengaged it from its recesses: *Cocta non cruda sunt movenda*; is still deserving of our regard. If things of this kind are given very early in critical fevers, nature will be weakened by the untimely expulsion of crude and salutary circulating humours. If, when the business is going on very well without, great interruption be given to the process of nature, the patient's disease becomes

becomes suddenly dangerous. The height and acme of such doubtful cases, as require both a spur, and evacuation, are those which require such remedies; and those, in which they will effect often what exceeds our expectations. I have observed that tartar emetic is very remarkably corrected in its operation, by the addition of camphire.—Perhaps the camphire involves the dissolved antimony; in the same manner as the glass of antimony is corrected and sheathed by a covering of wax, in the preparation of the vitrum antimonii ceratum. However that be, I am certain, antimonial wine and tartar emetic may be given in larger doses, without offending the stomach, when joined with camphire, than single; and camphire seems a very proper addition, when an increase of perspiration, and checking of putrefaction, is intended.

When miliary, crystalline, or elevated eruptions appear, perspiration is not only to be liberally supported by warming diaphoretic medicines, but care must be taken, that the eruptions do not fall back, either by rising out of bed, and sitting up too long in an erect posture; or by any natural or artificial looseness, an evacuation which, under these circumstances, was as visibly noxious, as in the general it was salutary.

Towards the decline, in these fevers, the mouth was, in many, interiorly covered, sometimes with a white aphthous crust, sometimes with white specks or floughs about the glands and palate, resembling those of the ulcerated fore throat. These were treated with antiseptic detergent gargles of tincture of myrrh, spir. of vitriol, oxymel simpl. and the bark in substance

stance was given internally with elixir or spirit of vitriol, in larger or more frequent doses than in any other condition of this disease; and I found it also necessary to restrain loose stools, which with this appearance manifestly sunk the patient's strength; and for this purpose, red wine in the drink and panada was allowed. Yet these apthose ulcers were manifestly symptomatic only; for the fever remained after they were removed.—Whereas in the malignant ulcerous fore throat (1752-3) the deposition of malignant matter about the fauces; seemed to constitute the most essential part of the disorder; for when the local appearance was removed, the symptomatic fever ceased of course: Just as we see that low fever, which arises from, and accompanies a mortification of any part, quickly ceases after a separation of the mortified part from the sound is effected.

The drinks allowed to persons labouring under this fever, were whey made sometimes with cream of tartar or vinegar, sometimes with white wine; also barley-water, limonade, wine and water, and cyder and water: For food, I never allowed any thing besides panada, gruel, bread and tea, or weak thin chicken broth; and preserved ripe fruits, as damasons, plums, roasted apples, preserved cherries, currants, and the like. I found it often proper to order the patient to use white wine as a cordial, and strong negus for drink; when the looseness ran to excess, negus of red Port wine, or the same mulled, was permitted; but the general usefulness of a tendency to moderate laxity, made it sometimes proper to avoid this astringent wine, though otherwise of excellent use in many putrid fevers.

fevers. To allay the thirst, sweet oranges, a slice of limon with sugar, or chriftals of tartar might be held in the mouth. I never refused my patients the liberty of drinking cold water when they craved it; which about the height they often did very earnestly. I could not but observe the most desirable effects from this indulgence; the sick were greatly refreshed, and a gentle diaphoresis was brought on, in consequence of its use. For this reason, I not only barely permitted the use of water when it was longed after, but prescribed the general use of toast and water to others.

The temperature of the air in which the patient breathes, must be rendered as favourable to his recovery as possible, throughout the whole course of the disease; for this reason, it must be continually renewed, especially where the patient or patients are crowded in small confined places, by opening the doors and windows of the apartment, so as to admit the free passage of the air; this practice, so necessary in the small-pox, is no less so in every species of putrid fever, but it must be done so as not to repress perspiration. The necessity of changing the air in a sick room, by successive ventilation, arises from the constant destruction of a certain property in that fluid by breathing, which renders it afterwards useless; likewise from the atmosphere being filled with the excrementitious steams which fly off from the patient's body continually, and which putrify in a stagnant unrenewed air, and render it truly poisonous, a pabulum morbi rather than of life. The physician will order the room to be kept sweet and clean; and stools, and
every

every thing offensive, to be removed as soon as possible. If the external air is immoderately cold and wet, the room must be kept warm and dry; and the fumes of amber, benzoin, myrrh, and camphire, may be diffused in the room, if sprinkled upon hot iron. Vinegar may be sprinkled about cold, if the weather is warm; and boiled with myrrh or camphire, an antiseptic steam will rise into the air which the patient breathes, greatly to his advantage: These steams will preserve the air free from putrefaction, and will insinuate themselves by the absorbent vessels of the lungs, into the blood-vessels, and will greatly assist in impeding the progress of putrefaction in the fluids.— These are the most commodious, if not the most useful methods of medicating the air the patient breathes; however, those who prefer the mineral acids, may order brimstone to be burnt; or may raise the marine acid very easily, by putting a certain quantity of common salt into a vessel, kept heated upon a chaffing-dish of coals; if to this, a small quantity of oil of vitriol is from time to time added, the air will be filled with a thick white acid steam; but both the marine and sulphureous acid must be disengaged at a considerable distance from the patient, otherwise their extreme pungency will be offensive to the lungs.

The situation and posture of the body, is in these fevers a matter of consequence for the patient's recovery; yet the same situation will neither be equally safe nor suitable to each individual. In many cases, the debility of the circulating powers is so great, as to render an erect posture of the body extremely dan-

gerous to persons labouring under malignant fevers ; as Hoffman has very justly observed. And yet on the other hand, the judicious Sydenham has observed, that too close and early confinement of febrile patients in bed, greatly increases the heat, and propensity to delirium and coma ; circumstances no less to be shunned.—In order to avoid these inconveniencies, it will be necessary to allow those patients who are so low and weak as to become giddy and faint by sitting upright, to lye upon the bed with their common cloaths on, at least some part of the day, in the beginning of the disorder ; by which, without incurring any danger of fainting, the febrile heat will be kept moderate.—But such patients as upon trial bear an erect situation, or sitting posture very well, may be allowed that liberty ; which in hot weather will be extremely beneficial, in moderating the heat, and checking those debilitating sweats, too apt to appear in the beginning of these disorders.—By this method also a moderate looseness is more encouraged (than when the patient is confined to bed) a circumstance extremely desirable. When I speak of the patient's sitting up, I suppose him at the same time confined to his room, and under proper medicinal and diætetic rules ; going into the open air, ought never to be permitted to any one seized with a malignant fever.

An equal temper of mind, without depressing fear, anxiety and care, is equally necessary to facilitate the salutary efforts of art and nature in conquering these fevers, as it is effectual in preventing their attacks. For this reason, the physician will, as much as he can,

can, prevent all occasions of discomposure to his patient, and ought as much as possible to infuse into him a confidence of his recovery.

This general treatment was what I experienced most usefully in the malignant fever I have described. —Nature thus assisted, generally brought about a salutary crisis, nearly at the fifteenth or seventeenth days, unless the case was fatal.—After a salutary crisis, the return of health was extremely slow; and I found it necessary to assist the patient's recovery of strength, by giving the gum pills, with a decoction of the bark and elixir of vitriol. The food of the convalescent patients consisted chiefly of nourishing broths, and animal jellies, soft eggs, tender white meats; sago, panada and milk, wine and water.

To the description of a contagious disorder, it is very natural to expect some rules, how infection is best to be avoided, should be subjoined. These, which might very properly be deduced as corollaries, from the reflections I shall make concerning the production and progress of putrid disorders in general in animal bodies, I place rather here, that every thing of the preceptive kind may lye together. The great business of preserving the body free from contagion, consists in preserving the motion of the blood free and regular, and in supporting insensible perspiration in a regular equable tenor: Fatigue of body, and dissipation of spirits, and an intemperate use of the non-naturals, must be avoided: A cold chill damp air, must be corrected with fires: Wines are neither to be used immoderately, nor yet too
spa-

sparingly: I seldom have known habitual drinkers of red wine affected with putrid diseases; this, and the acids of limons, oranges, vinegar, tartar, spirit of nitre, and elixir of vitriol, and the bark, are the best preservative, as well as excellent curative remedies. Bleeding in the plethoric preserves from contagion: In the weak, not only the loss of blood, but also the use of strong purgatives promotes infection; whilst a prudent use of rhubarb, by hindering a congestion of sordes and bile in the *primæ viæ*, cannot but be useful. Vegetable food, and acescent liquors, ought ever to constitute a considerable part of the daily food of those who are exposed to infectious disorders. No one ought to go abroad, more especially to visit the sick, with an empty or a craving stomach: The mind must be preserved in a fearless exhilarated state, without immoderate dissipation of spirits, either by joy or grief. Lastly, persons who frequent the beds of the sick, either in visiting or attending upon them, ought to avoid breathing in the atmosphere which is contiguous to the patient's body as much as possible; the saliva should never be swallowed in the room; myrrh may be held or masticated in the mouth; tobacco smoaked; and the mouth may be washed with vinegar, or tincture of myrrh in water, after finishing those offices which duty and humanity require to be performed to the afflicted.

I have used without reserve, the epithets putrid and malignant, in this historical description, because I am persuaded, they are in all respects as intelligible, and have as much a foundation in nature, as any terms that have been substituted in their place: No

one hesitates to call those fevers which arise from a glutinous spissitude of the blood, inflammatory.—But as there are also fevers that arise from an acrimony and tenuity in the blood; and others which partake both of spissitude and tenuity, such may with great propriety be distinguished from the simply inflammatory, by the appellation of *malignant*, or *gangrenous*, as any one pleases.—But as these conditions of the animal fluids are generally caused by some putrefcence, either spontaneously produced in the body of the individual, or received by contact, inhalation or infection from others; to such the term *putrid* cannot be misapplied.—In the days of Sydenham, it seems all fevers were as indiscriminately treated according to the then reigning methods of resisting malignancy, as they have since his time been treated as purely inflammatory.—Perhaps in both cases with equal damage to the sick, and disrepute to the art. For nothing is more certain, than that disorders so differently circumstanced, require a very opposite or mixed treatment; and that a method exactly suitable to one, cannot be applied to the other two, without endangering the patient's life by the inartificial confusion.

The excellent Baglivi, whose works I esteem and admire very highly, tells us, “*Omnes acutæ febres per sanguinis missionem curare incipio.*” It may be, his rule was too general, considering the liability of the Roman territory to putrid malignant fevers, from the frequent inundations of the Tyber. At least this constant practice enables us very well to account for his unsuccessful treatment of those fevers
in

in which the blood was florid. “ Observavimus in
 “ Xenodochio; omnes fere ab acutis evassisse, quo-
 “ rum sanguini venesectione extracto, crusta alba at-
 “ que chylosa super crescebat: Contra mortuos,
 “ quorum sanguis valde rutilans erat; sive cum su-
 “ perficie nimium rubicunda.” Romæ æstivo tem-
 “ pore, Anno 1693 *.

No one who considers the history of pestilential contagious fevers, or examines whence the fluids come to be corrupted, and new mortifications generated, from the assimilating fermentive power of the absorbed sanies produced in topical gangrenes, will doubt of the possibility of the existence of some degree of putrescence in living bodies.—Perhaps the figure, bulk, and primary action of that subtle and powerful agent, which we call putrescence, may be unknown; yet there are effects, by which its real existence in living bodies under certain circumstances, is as evidently ascertained;—as the cohæsion of the particles of matter proves there is such a power in nature as *attraction*,—or the descent of bodies, and the revolutions of the vast celestial orbs, such a one as *gravity*.—Upon these terms, though in their causes, and in all respects, except in their effects, unknown to us, we rest, nevertheless, the philosophical solution of the phænomena of the universe.

Putrescence is generally defined to be a solution of the union of the heterogeneous particles, of which mixt bodies are composed,—by this disunion the properties of the body are entirely changed,—and a va-

* Bagliv. Prax. Med. Lib. 1. Cap. XIII.

pour flies off into the air, of a most offensive smell.—This bears no resemblance to the smell of volatile alkaline salts.—These revive; that produces almost a delirium animi.—This vapour acts upon other bodies as a putrefactive ferment.—Even in heaps of succulent vegetables, beginning to putrefy, if this vapour be dispersed, and the plants are properly aired or ventilated, the progress of their putrefaction will be entirely stopt. Moisture and heat are both absolutely necessary for the promoting of putrefaction in all bodies. Putrescence, in respect of its spreading multiplicative power, is very justly supposed analogous, in its operation, to ferments; which diffuse their action very wide, excite intestine motion, and assimilate into their own nature and properties, bodies which are susceptible of this operation *.

Respecting its action upon the circulating fluids of living animals, putrefaction has been compared to volatile alkaline salts,—and the rather, as putrid substances, chemically treated, are found to abound with volatile alkalies.—These salts melt down the blood globules, and prevent coagulation when it is extravasated. Putrescence produces the same effect, but in a much higher degree, on account of its multiplicative property as a ferment: In this it greatly differs from alkaline salts; which, in fact, are found capable of preventing the putrefaction of animal substances †. But volatile alkalies, and putrefaction, differ still

* See the analogy very accurately pursued in Hoffman's *Dissertation de Putred. Doctrina & Amplif. usu* Tom. VI.

† See the excellent experiments of Dr. Pringle upon septic and antiseptic substances.

more essentially in their effects upon the solid irritable parts of living animals. Volatile alkalies irritate, but do not immediately debilitate.—Putrescence both irritates, and instantly, upon contact, debilitates.—It weakens most remarkably the force of the heart and arteries; and still more that energy, whatever that may be, which is derived from the nerves.—This sudden debility arises perhaps from a resolution, or a disunion of the component particles of our solids already begun.—And yet the sensible and irritable parts, as if directed by some consciousness, or some feeling, of its deleterious power, with febrile movements, make an effort to repel or expel it out of the body.

Animal bodies are so evidently in themselves prone to putrefaction, that few have enquired why they putrefy; though it has long been esteemed no incurious nor uninteresting enquiry, Why living bodies do not resolve into putrefaction as dead ones soon do *? The incessant motion and agitation of our fluids in the arterious and venous vessels, is one great cause of the preservation both of solids and fluids from putrefaction: When this motion ceases, even in a few of these vessels, corruption or putrefaction quickly ensues.—And the putrefactive fomes is soon dispersed over the whole mass of blood, and acts upon it, as a ferment, in producing a like intestine alteration and putridious resolution throughout. This evidently appears in sphacelations, which, however apt to arise from

* Sanctorius proposes and solves the problem very elegantly, Aph. Lib. I. §. LXXX. "Caro animata cur vivit & non putrescit
"ut mortua? Quia quotidie renovatur."

the most opposite causes, by the assimilating virtue of the putred fomes received into the mass of blood, constantly produces a low malignant fever; which does not cease till the mortified parts are separated from the living. But mere motion alone will not long preserve our fluids from putrefaction; unless those particles of our solids and fluids, which have been rendered acrid and almost putrescent by their long circulation in the body, be sent off, and separated from the circulating fluids, by a due secretion and excretion of urine, and of the cutaneous evacuations *. It is also no less necessary, that the perpetual loss of humours be restored with bland and acescent food, which will temper the acrimony and putrescent tendency of the animalized liquors, whilst itself is converted into a nourishing gelatinous fluid, by the copious admixture of bile, lymph, and blood, and by the motion and heat, resolving from the action of the whole organic and vascular systems.

Hence, if the nutritious liquors stagnate in any of the vessels of the body.—If the acrid matter, which ought to be excerned by urine and perspiration, is retained in the body.—Lastly, If the highly animalized blood, and bile, be not tempered by the assumption of a sufficient quantity of acescent food: In such circumstances, the mass of blood and bile, and the humours to be excerned, being too highly animalized, will become so far disposed to putrefaction, as is in-

* “ Si ex ponderatione videris consuetum perspirabile retineri, & sudorem vel lotium post aliquot dies non facessere inde cognosces, retentam prænuntiare futuram putredinem.” Sanct. de Ponder. Lib. I. p. 43. See also §. 46, 47, 48. *ibid.*

consistent with health and life ; and disorders truly putrid, and very certainly malignant, will ensue.—The remote causes which have been found productive of malignant disorders, produce one or other of these effects upon the human body.—From the experience of ages it is known, that a long continued moisture of the atmosphere, from wet seasons, especially in summer and autumn ; or from inundations in low fenny situations ; and long sea voyages, especially in wet hazy weather ; have ever been attended with disorders, in which the humours were evidently corrupted and resolved *.

A dearth or scarcity of provisions, especially of the alimentary grains ; the frequent effect of intemperately wet seasons ; has generally, in every age, been accompanied with epidemic putrid sicknesses. These prevail most amongst the poorer sort of people ; many of whom, in these times, were almost half-starved ; at best, water and animal food bear a greater proportion in the diet of this necessitous part of mankind than is usual ; and they are much less abundantly supplied with the acescent or vegetable part of diet, such as bread, beer, cyder, than is perhaps necessary for the preservation of health in the labouring part of men.—Perhaps a putrid fever may at any time be produced by a long disuse of vegetable food †. I lately attended a person who had, for a conside-

* Hippocrat. Aph. §. 3. Art. 15, 16. Sanctorius accounts for the bad effects of a moist atmosphere, thus : §. II. Aph. VIII. “ In cœnoso (aere) prohibetur perspiratio, meatus implentur, sed non densantur, fibræ laxantur, non roborantur, & pondus perspirabilis retenti lædit, & sentitur.”

† Vide Boerhaav. de Morbis ex Alcalino Spontaneo Aphorism.

rable time, 'confined himself to the use of animal food, and water only, with a small quantity of rum, to prevent the returns of heart-burn, acidity, and gouty pains in his stomach, complaints 'he had been much subject to.—Under this antacid diet a putrid fever insensibly crept upon him.—He complained of pains about the hypochondria; his breath and sweat stunk abominably; his skin was much spotted with livid and brown blotches of different sizes; he was seized with a gangrenous livid erisipelas of the pendulous part of the palate; which changed into a white crust, and afterwards separated from the sound flesh like the eschar of a mortification.—He with much difficulty got over this putrid illness; but, since that time, has used red wine and acescent liquors. The bile necessary indeed for animalizing our ingesta, is, however, a poison, unless its acrimony be tempered with a considerable proportion of acescent food. Animals which die of famine, do not perish for want of blood, but are carried off by a truly putrid fever, arising from the poison of putrescent acrimony in the blood, which gradually loses its bland gelatinous consistence, and becomes a putrid gore, not separable into serum and crassamentum *.

A laxity of vessels, and either too great an abundance, or a want of the salutary humours, and a scorbutic cachexy of the blood, seem to dispose the bodies of individuals to produce, or receive, malig-

* Hippocrat. Aph. §. I. Aph. 4 and 5. Sanctor. §. III. Aph. 16, 17, 85. and §. 4. Aph. 20, 21. See also a case in point related by Dr. Huxham, in his Dissertation on the malignant ulcerous sore Throat, p. 63.

nant fevers : For perspiration is generally imperfect in such a state of the body. But, of all those things called non-naturals, which stop perspiration, and dispose individuals to receive malignant fevers ; uneasy passions of the mind, especially fear, sorrow, despondency, are of the most dangerous consequence *. Quicker than poison, they weaken the force of the heart and arteries. Appetite and concoction are languid.—The retained perspiration, in its turn, augments these disagreeable sensations of the soul.—And thus too often an indissoluble and fatal circle is formed, dangerous as a cause in every disorder, but in malignant fevers especially, ominous both as a cause, and as a symptom.

To these remote causes, the susception of contagion, and of infectious effluvia into the body, must be added.—Thus subjects, by constitution very little disposed to these disorders, are sometimes suddenly seized with them, especially if exposed to infecting causes, when perspiration, upon one account or another, is stopped and impeded. It is well enough known, that the bile and blood of diseased animals will impart the same illness to others † : nor can it
be

* “ Inter animi affectus, ira & pericharia corpora efficiunt leviora ; timor & mæstitia graviora ; cæteri vero affectus at his participantibus operantur ; Perspiratio impedita a quacunque causa mæstitiam & timorem facit.” Sanctior. de Animi affectibus, Aph. 1, 8.

† By some late experiments mentioned in an ingenious treatise upon the malignant distemper of the black cattle, by Dr. Layard, it appears, that this putrid distemper has been advantageously imparted to other cattle, by inoculating them, after proper preparations, with matter taken from the ripe boils of young cattle recovering from the distemper, and inserted into a wound made in the
shoulder

be doubted, but that the offensive smelling perspiration, putrid stools, and critical sores, send off a volatile, putrid, infectious miasma, which, breathed into a disposed body, or mixed with the saliva, and sent down into the stomach, is in like manner pernicious.

The circumstances attending the beginning of most infectious disorders, point out this to be precisely the manner and place in which infectious miasmata are received, and first begin to assert their active assimilating powers. For, being mixed with the saliva and gastric juices, that putrefaction in them, and in the ingested food, by its means arises, which Plistonius formerly imagined to happened in ordinary digestion : The same is quickly propagated in the bile, which perhaps, of all the juices in the human body, is the most animalized, and the fittest fuel for feeding this putredinous flame ; which now inkindled in the stomach and duodenum, diffuses itself very soon over the whole body, and by its morbid effects, as it goes along, gives very evident marks of its progress.

shoulder or buttocks of the sound beast. When the operation succeeds, the wound swells, and becomes discoloured about the third day, and the beast sickens the sixth. A curious regard to interest seems to have been the motive for trying this experiment : But Dr. Deidies, from a desire of improving science, injected the bile of persons dead of the plague at Marseilles, into the veins of dogs ; which always died in three or four days, with buboes, gangrenes, and other essential marks of the plague about them. *Phil. Transf.* No. 370. The same kind of bile, swallowed by dogs, made them only for a little time sick and heavy. Dr. Couzier put infected blood into a wound in a dog ; next day the dog died, and the wound was swelled and gangrened. *Phil. Transf.* No. 372.

In the stomach we find it first occasioning weight, uneasiness, lowness, dejection, inappetency, aversion to food; and, by its sympathetic action (by the nerves) upon the brain, giddiness, heaviness, and pain in the head, are complained of; afterwards it causes nausea, vomiting, and a kind of burning-sense of pain; in the intestinal tract it occasions griping pains, borborygmi, a dysenteric looseness, though sometimes an obstinate costiveness: Last of all, a sense of burning heat about the præcordia; and, after death, gangrenous spots appear both in the stomach and in the duodenum, and other intestines. Arsenic, glass of antimony, corrosive sublimate, produce some such effects, and surely that is poison, which acts in any respect like these. When this virus is absorbed into the lacteals, the chyle and lymph are corrupted by it; and, being received into the blood-vessels, and diffused throughout our mass of fluids, it dissolves that copula, and mutual attraction, which ought to subsist among the particles or globules which compose our fluids.—Hence the blood sometimes does not coagulate.—It is always tender and less coherent, and the serum is almost of a sooty colour, from the broken red globules mixed with it. A bland gelatinous viscosity, the character of nourishing animal liquors, is lost.—Instead thereof, the putrefied fluids become rank and thin.—And here again the stimulus of this subtle acrimony displays the most fatal and ruinous marks of its reality and existence. Now mixed with the blood, and in perpetual contact with the most sensible and irritable internal surface of the heart and blood-vessels; languid, tremulous, ir-

regular

regular motions are produced.—The pulse vastly quicker than usual, is notwithstanding irregular, fluttering, and small.—The proper action of this poison upon the solid parts, seems to consist in producing the most sudden prostration of strength, with lowness, anxiety, lassitude, and desperation of life, that can be imagined. The natural and proper action of every part is subverted. The weakness of the heart, and circulating powers, appears from the sudden fainting of some patients, from an erect posture, or the least exertion of muscular action, in these disorders. These morbid motions continuing, and the poison having spread its action wider, and multiplied its force more, the broken red globules are thrust into lymphatic and serous vessels.—Hence the action of the brain is disturbed and perverted, the patient becomes phrenetic; though, in many milder cases, the brain is perhaps chiefly disturbed, in consequence of that sympathy which subsists betwixt the stomach and brain, by means of the eighth pair and intercostal nerves.—Petechial spots, broader vibices, and at last true gangrenes, the consequence of this general error loci, appear upon the skin and internal surface of the membranes, and intestinal canal.

If we consider, that the external air has perpetual access to the intestines, and that the animal liquors, and materials to be digested, are fit subjects of putrefaction; we shall not be surprized, that its action is chiefly diffused from, and produces the worst and most conspicuous effects in the primæ viæ. The

celebrated *Bartholine*, observed in the bodies of those who died of the epidemic malignant fever raging at Copenhagen in 1652, that the stomach and duodenum were always inflamed and mortified *. *Hoffman* observes, that true petechial fevers often end in a real sphacelation of the stomach and parts adjacent †. The dissections of the ingenious Dr. *Pringle* shew, that though the brain is sometimes inflamed and suppurated in those who die of malignant fevers, yet the intestines are most liable to mortify ‡. *M. le Cat*, in those ingenious observations which we have already cited, concerning the malignant fever raging at Rouen in 1752-3, takes notice, that in the dead bodies of those who had been most delirious during this illness, no morbid appearances were seen in the brain; only the stomach was ulcerated, its villous coat separated, and an inflammation, with gangrenous spots on the other coats of that organ: In general, the villous coat of the œsophagus, stomach, and small guts, was inflamed, or filled with large military eruptions of the crystalline kind ||.

I could find none of my people disposed to gratify my curiosity, in opening the bodies of those who died of our distemper; but, from its great similarity to that which raged at Rouen, I am persuaded the internal appearances would have been nearly the same.

* See *Bartholine* cited in *Pringle's diseases of the army*, p. 191.

† *Hoffman*. Oper. Tom. II. p. 85. De Febribus Petechialibus veris.

‡ *Diseases of the army*, p. 3. cap. 6. §. 4. and cap. 5. §. 2.

|| See this author's excellent history of the diseases reigning at Rouen, 1752-3, published *Phil. Transf.* Vol. 49, part first.

—And, in my patients, I am apt to think the delirium was often symptomatic, from the sympathy of the brain with the primæ viæ; but, in saying often, I do not say always; as the continuation of the febrile impetus might at last occasion a kind of inflammation of that part very frequently. From this general reasoning, the ætiology of symptoms and effects in the disorder I have described, will easily be deducible; and it will appear, that, in the method of curing distempers similar to these, every thing must be so directed, that the putrid poison be eliminated, and its operation mitigated, evaded, and counteracted, with judgment and care. In order to attain these great ends, nature, or the vital strength, must be properly supported; and the spontaneous efforts she makes to throw off the disorder, must be imitated and promoted. For, however similar malignant disorders are in an abstract view of their nature, one to another, yet observations shew us the method of curing them is often very different. Thus the malignant fever of 1752-3 was promoted, and the life of the patient endangered, by evacuations, gentle purging not excepted.—In 1756, we find the alvine purgation very salutary. In a word, a general knowledge of fevers, however just and accurate, will never supersede the necessity of exact and accurate observation; which alone can teach us those nice but important differences, upon which the cure of acute diseases will ever depend.

“ Illud ignorari non oportet; quod non omnibus
 “ ægris eadem auxilia conveniunt. Ex quo incidit,
 “ ut alia atque alia summi auctores, quasi sola vendi-
 “ taverint,

“ taverint, prout cuique cesserant. Oportet itaque
 “ ubi aliquid non respondet, non tanti putare aucto-
 “ rem quanti ægrum, & experiri aliud atque
 “ aliud. * ”

* A. C. Celsi Med. L. 3. c. 1.

F I N I S.



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